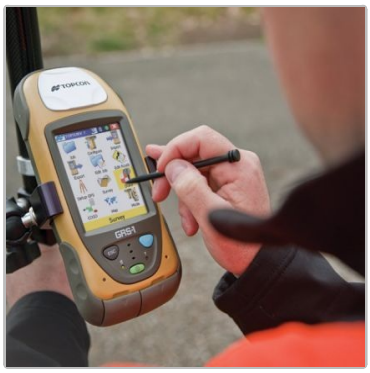
Topcon GRS-1

Topcon, the company that brought you the first integrated GPS receiver now brings you the first fully integrated handheld GNSS receiver and field controller!

Features & Benefits:

- Smallest, lightest RTK rover receiver
- 1cm RTK accuracy
- Dual-frequency, 72 channel GPS + GLONASS receiver
- Fastest receiver—100Hz
- Integrated cell phone (GSM, CDMA)
- 806MHz XScale Processor
- Bright, touch screen display
- Integrated camera & compass
- Windows® Mobile 6.1 Operating System
- Built-in Bluetooth® wireless technology and Wireless LAN connectivity

View Promotional Video



Topcon's new GRS-1 (Geodetic Rover System) is the world's first fully integrated dual constellation network enabled RTK rover system. It is an all-in-one handheld GNSS receiver and field controller featuring high-speed processor, increased memory, built-in camera and digital compass. Also integrated are an SD memory card slot, optional internal GSM or CDMA modem, and wireless connectivity via Wireless LAN and Bluetooth® wireless technology.
The GRS-1 achieves three primary and evolutionary goals for a GNSS receiver: small size, minimal weight, and affordability. It provides DGPS capability via an internal L1 antenna, perfect for the GIS and navigation space. Instantly move to centimeter RTK accurate dual frequency / dual constellation GNSS by simply adding a carbon-fiber pole with Topcon's PGA-1 external antenna then connect to your local GNSS network via the internal modem. As an added benefit, the GRS-1 can also be used as a static post processed receiver system.

Built-in 2.0 Megapixel Camera

That's right, the GRS-1 comes with a 2.0 megapixel camera with autofocus for taking pictures. Store photos on-board with the 1GB of Flash memory or use the external SD card slot for additional memory.

Internal Magnetic Compass

Utilizing compass bearing with GNSS positioning, the magnetic compass allows for additional measurements to be taken from a single location.

Extra Memory

With 1GB Flash standard, the GRS-1 is loaded with memory. But if you need more, the SD card slot and the mini USB Host functionality can provide additional memory. Use the USB mini port as both a Host and Client. This functionality allows for expanded memory and easy file transfer through USB flash drives or SD memory cards.

Expansion Connector

Weatherproof expansion port allows for the addition of the RH-1 unit. The RH-1 will allow the GRS-1 to communicate with radio based base stations for RTK operation. It is compatible with all previous radio types that are currently in use with Topcon GNSS systems. This includes Digital UHF, Spread Spectrum, and FCS enabled UHF radios from all previous Topcon systems.

Bluetooth® and Wireless LAN

Built-in Bluetooth wireless technology and Wireless LAN connectivity come standard. No need for expensive

General Details	
Dimensions	Width 3.54" (90 mm) x Height 8.46" (215 mm) x Depth 2.08" (53 mm)
Weight	1.7 lbs (0.77 kg) with battery
Antenna Internal	Single Frequency, L1 (GPS and GLONASS)
With External Antenna	Dual Frequency, L1 / L1 (GPS and GLONASS)

Controller	Windows Mobile 6.1 Classic operating system
Tracking Specifications	
Tracked Signals	GPS, GLONASS, L1 C/A Code & Carrier, GPS L2C, WASS / EGNOS / MSAS
Standard Channels	226 Universal Channels
Environment	
Operating Temperature Range With Batteries	-4 F° to 122 F° (-20 C° to +50 C°)
Operating Temperature Range Using Camera	14 F° to 122 F° (-10 C° to +50 C°)
Storage Temperature Range With Batteries	-22 F° to 140 F° (-30 C° to +60 C°)
Waterproof Rating	IP66 (with all connector caps closed), IPX4 (Weatherproof) at external antenna cable connection
Power	
Internal Battery	Li-ion, 2500 mAh 7.4V; replaceable (BT-66Q)
Operating Time	3.5 hours at full use
Operating Time	4 hours without cell phone use
Operating Time	9 hours without internal GNSS and cell phone usage
On-board Backup Battery	CR2032 for timekeeping; replaceable button-type battery; 8–10 years
External Power	1 port
Input Voltage	8 to 15 V DC (for work), 10 to 15 V DC (for charge battery)
Output Voltage	12 V - 3 A
Consumption	5.3 W (with Windows Mobile and GPS and GSM)
Battery Charger	Connect the AC adaptor to charge the power port
Charging Time	within 5 hours for full charge
Communication	
Cellular Communications	GSM / CDMA
Frequency	Quad Band 850,900,1800,1900MHz, CDMA800,1900MHz, WCDMA,2100MHz
USB Port	Version 1.1 (mini B)
Bluetooth® Modem	Bluetooth standard 1.2; Class 2; Profile: SPP,
Wireless LAN Transmission Specifications	IEEE802.11b/g
Access Method	Infrastructure mode, Ad hoc mode
Security	Wired Equivalent Privacy (WEP) 128/64bit, Temporal Key Integrity Protocol (TKIP)
Frequency	2.4GHz (2,412~2,462MHz) (1~11ch)
Transmission Method	Direct sequence spread spectrum (DS-SS) communication
Transmission Output	30mW
Transmission Distance	32.8 feet (10m) in good visibility
Connectors and Slots	
Processor Speed	806MHz
Processor Type	Marvel PXA320
Internal Hard Drive	1 GB (NAND Flash Memory)
Internal RAM	256 MB (DDR2 SD RAM)

Operating System	Microsoft Windows® Mobile 6.1 Classic
Digital Camera	2 megapixel resolution (1600 × 1200 pixels)
SD Card	1 slot for memory storage and I/O
Serial Port	1 port for communication with the GMS+ board (port A); small connector
USB Port	1 port for Windows Mobile; type B mini ver 1.1; connect to PC using ActiveSync
External Power	1 port; DC Jack type A; for connecting the AC adaptor or external battery
External Antenna Connector	Lemo connector (EPS.01.250.DLN); 5 VDC output to external antenna
Digital Compass	Axis = Three (X,Y,Z)
Azimuth Angle Accuracy	+/- 8° (after calibration)
Inclinometer	Axis Two (X,Y)
Angle Range	+/- 30°
Tilt Angle Accuracy	+/- 2° (with reference to optical axis of distance meter)
LCD Display	
Size	640 x 480 VGA (portrait / landscape) 3.7 inch color TFT
Backlight	LED (Light Emitting Diode)
Survey Accuracy	
Static Surveying For L1 Only	Horizontal = 3mm + 0.8ppm (x baseline length); Vertical = 4mm + 1.0ppm (x baseline length)
For L1 +L2	Horizontal = 3mm + 0.5ppm (x baseline length); Vertical = 5mm + 0.5ppm (x baseline length)
RTK	For L1/L1 +L2: Horizontal = 10mm + 1.0ppm (x baseline length); Vertical = 15mm + 1.0ppm (x baseline length)
Differential GPS Post processing/RTCM	Typically less than 0.5m (RMS)
Real Time Data Output Format	RTCM 2.3, 3.0; CMR, CMR+; TPS NMEA NMEA 2.2, 2.3, 3.0